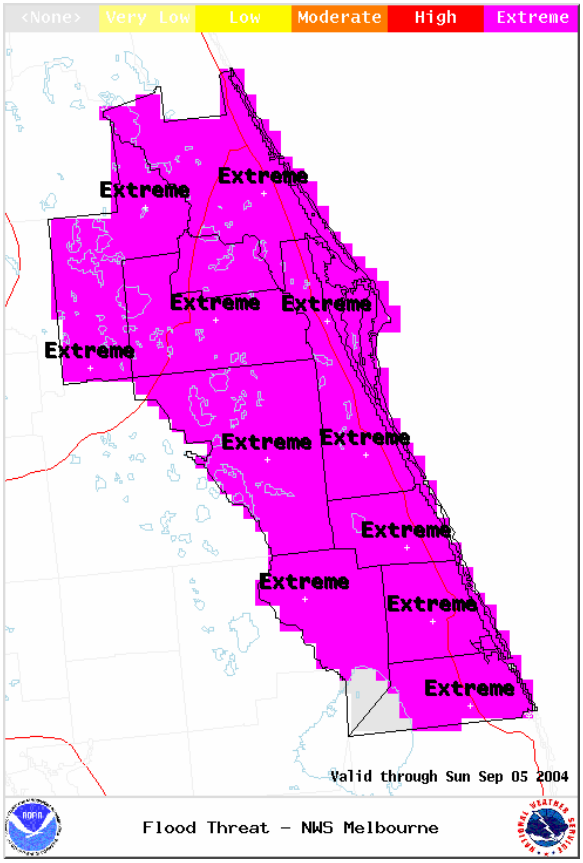
Experimental

Tropical Cyclone Flood Threat Product



Description: Issued by the local Weather Forecast Office (WFO) during tropical cyclone situations, the ***Tropical Cyclone Flood Threat*** product responsibly depicts the impending threat of the associated flooding hazard from heavy rain. It conveys the maximum level of threat projected for the event using a color-coded index scale ranging from 0 to 5, *Non-Threatening* to *Extreme*. It combines the forecasting expertise of the Hydrometeorological Prediction Center and the local WFO by considering both the regional-scale environmental conditions and local-scale enhancements conducive for flash flooding or rapid inundation (within 6 hours after heavy rain). The threat levels are based on the likelihood that inland flooding will occur combined with the anticipated magnitude of the worst flooding, offering a more complete expression of the overall threat. Although product release is triggered by the issuance of a tropical cyclone Watch or Warning anywhere within the defined area, the threat of flooding can be much broader in both time and space. Routine updates are provided shortly after each official advisory and are continued until tropical cyclone flooding is no longer an immediate threat to local communities.

Utility: The ***Tropical Cyclone Flood Threat*** product uses an index scheme to distill the abundance of inland flood threat assessment information into a single plan-view map that is easy-to-understand. For visual simplicity, warm colors (yellow and orange) are used for lower threat levels with hotter colors (red and purple) reserved for higher threat levels. A description of each threat level is readily available and highlights the minimum corresponding actions and relates them to potential impacts. Importantly, in tropical cyclone situations, inland flooding from heavy rain can occur well before landfall (making preparedness and evacuation efforts more difficult), well after landfall (making rescue and recovery efforts more hazardous), and in locations well away from the tropical cyclone center (making it more challenging to elevate public concern). Although current and forecast stage data are important, users should note that longer-term flooding of major rivers is not explicitly addressed within this product.

For Example: Upon the issuance of a tropical cyclone Watch or Warning, residents living near an already swollen lake and stream might investigate the ***Tropical Cyclone Flood Threat*** product to assess the potential for impending (flash) flood watches and warnings. Finding their location subject to an extreme inland flood threat, the personal decision may be made to quickly finish sand bagging, gather essential belongings, and temporarily evacuate before possible flood waters cut off escape routes. Also, officials would have a better indication of the extent to which flood waters might prompt dangerous water rescues and where the worst flooding is most likely to impact recovery efforts.

Note: The example image depicts the inland flood threat from heavy rain associated with Hurricane Frances (2004) as expressed within 24 hours of landfall in east central Florida. Threat level depictions are based on the likelihood that flash flooding or rapid inundation will occur, while accounting for the anticipated magnitude of the worst flooding. Due to the rather large size and slow forward speed of Frances, the entire area was subject to an extreme inland flood threat.

Hazard – Tropical Cyclone Flooding

Threat Index Level	Description
Extreme	• **Threat:** An extreme threat to life and property. • **Minimum Action:** Preparations should be made for a very high likelihood of inland flooding; highest rain totals expected to well exceed flash flood guidance. • **Potential Impact:** The potential for scattered locations to experience major inland flooding (see below), among many locations of minor to moderate inland flooding.
High	• **Threat:** A high threat to life and property. • **Minimum Action:** Preparations should be made for a high likelihood of inland flooding; highest rain totals expected to well exceed flash flood guidance. • **Potential Impact:** The potential for isolated locations to experience major inland flooding (see below), among scattered locations of minor to moderate inland flooding.
Moderate	• **Threat:** A moderate threat to life and property. • **Minimum Action:** Preparations should be made for a moderate likelihood of inland flooding; highest rain totals expected to exceed flash flood guidance. • **Potential Impact:** The potential for isolated locations to experience moderate inland flooding (see below), among scattered locations of minor flooding.
Low	• **Threat:** A low threat to life and property. • **Minimum Action:** Preparations should be made for a low likelihood of inland flooding; highest rain totals expected to be near flash flood guidance. • **Potential Impact:** The potential for scattered locations to experience minor inland flooding (see below).
Very Low	• **Threat:** A very low threat to life and property. • **Minimum Action:** Preparations should be made for a very low likelihood of inland flooding; highest rain totals expected to be near flash flood guidance. • **Potential Impact:** The potential for isolated locations to experience minor inland flooding (see below).
Non-Threatening	• **Threat:** No discernible threat to life and property. • **Minimum Action:** Listen for forecast changes; review flooding safety rules. • **Potential Impact:** None expected; heavy rain may still occur.

Minor Flooding – Minor flood damage within 6 hours after heavy rain. Small streams, creeks, canals, and drainage ditches become swollen and overflow in a few places. In flatter terrain, quick ponding of water occurs around low-lying spots, especially in historically vulnerable locations. In urban places, quick ponding of water occurs at certain underpasses or poor drainage spots, especially in historically vulnerable locations. Storm drains and retention ponds become near-full and begin to overflow in a few places. In mountain areas, runoff moves down the valley and is becoming a concern, especially in river valleys. Overall, flooding impacting a few buildings and roads.

Moderate Flooding – Moderate flood damage within 6 hours after heavy rain. Rivers and tributaries become swollen and may begin to overspill their banks in a few places, especially in historically vulnerable locations. Small streams, creeks, canals, and drainage ditches overflow. Normally dry gullies or dry creek beds become alive. In flatter terrain, expanded areas of rapid inundation occur around low-lying spots covering several secondary roads. In urban places, expanded areas of rapid inundation occur at several underpasses or poor drainage spots, with some streets and parking lots taking on moving water. Storm drains and retention ponds overflow. In mountain areas, considerable runoff moves fast down the valley washing out some roads, especially in river valleys. Hillsides vulnerable to erosion become a concern for mudslides. Overall, flooding impacting several buildings and roads.

Major Flooding – Major flood damage within 6 hours after heavy rain. Rivers and tributaries overflow their banks in several places. Small streams, creeks, canals, and drainage ditches become dangerous rivers. Normally dry gullies or dry creek beds become alive with dangerous and fast moving water. In flatter terrain, extensive inundation occurs covering both primary and secondary roads. In urban places, widespread inundation with streets and parking lots becoming rivers of moving water. In mountain areas, destructive runoff moves fast down the valley washing out everything in its path, especially in river valleys. Hillsides vulnerable to erosion give way to mudslides. Overall, flooding significantly impacting many buildings and roads.